

CLAIMS

What is claimed is:

1. A phosphorylated mammalian glyoxalase I.
2. The phosphorylated mammalian glyoxalase I of claim 1, wherein the mammalian glyoxalase I comprises an amino acid sequence of SEQ ID NO: 1.
3. A process for modulating methylglyoxal-modification of proteins, wherein the process is selected from the group consisting of:
phosphorylating a glyoxalase-I;
inhibiting phosphorylation of the glyoxalase-I;
producing a phosphorylation mutant of the glyoxalase-I; or
combinations of any thereof.
4. A process for modulating TNF induced cell death, wherein the process is selected from the group consisting of:
phosphorylating a glyoxalase-I;
inhibiting phosphorylation of the glyoxalase-I;
producing a phosphorylation mutant of the glyoxalase-I; or
combinations of any thereof.
5. A process for modulating stress induced cell death, wherein the process is selected from the group consisting of:
phosphorylating a glyoxalase-I;
inhibiting phosphorylation of the glyoxalase-I;
producing a phosphorylation mutant of the glyoxalase-I; or
combinations of any thereof.

6. The process according to claim 5, wherein the stress is oxidative stress.
7. The process according to any one of claims 3-6, wherein the glyoxalase I is a mammalian glyoxalase I.
8. The process according to claim 7, wherein the mammalian glyoxalase I is mutated at amino acid residue 45 or 98 or at any other amino acid residue that affects phosphorylation.
9. The process according to claim 8, wherein the mutated amino acid residues are at position 45 or 98 of SEQ ID NO: 1.
10. The process according to any one of claims 3-6, wherein the inhibitor is a PKA inhibitor.
11. A process for modifying glyoxalase I comprising:
phosphorylating the glyoxalase I with PKA.
12. A process for modulating methylglyoxal-modification of proteins in a cell comprising:
contacting the cell with a means for phosphorylating a glyoxalase I associated with the cell.
13. The process according to claim 12, wherein the means for phosphorylating a glyoxalase I is selected from the group consisting of TNF, PKA, or combinations thereof.
14. The process according to claim 12, wherein the means for phosphorylating a glyoxalase I is TNF.
15. The process according to claim 12, wherein the glyoxalase I is mammalian glyoxalase I.

16. The process according to claim 12, wherein the glyoxalase I comprises an amino acid sequence of SEQ ID NO: 1.

17. The process according to claim 3, wherein the modulation of the methylglyoxal-modification of proteins occurs in a cell.

18. The phosphorylated mammalian glyoxalase I of claim 1, produced by the process comprising:
treating a cell with TNF.